A Competitive Market Structure for Air-To-Ground Service Will Maximize Consumer Benefits

Dr. Paul A. London

- The FCC's consistent policy objective over 30 years, and its Congressionally mandated goal under the Telecommunications Act of 1996, is to promote competition in all telecommunications markets, to the benefit of consumers.
  - A competitive market structure in the Air-to-Ground ("ATG") sector will benefit consumers, including air passengers who purchase ATG service as well as airlines who enter contracts for the installation of ATG systems on their planes.
  - Competition between providers would encourage service innovation and deployment of new technologies, create choices, and yield much lower, competitive pricing that simply will not exist if the current monopoly is extended.
- An auction cannot be used to determine the market structure, because the outcome will inevitably be a monopoly, which will harm consumers.
  - The auction of a single ATG license will yield a monopoly marketplace outcome, whether the auction is won by a single bidder or by a consortium consisting of multiple entities.
    * This is because the participants in the consortium will have no incentive to divide up the license so as to compete with one another after winning the bid. Rather, they will maximize their revenues and profits by staying together and offering service as a monopoly.
  - For similar reasons, under a system of "combinatorial" bidding in which participants could bid either for a single exclusive 4 MHz license or for varying subsets of the spectrum as part of a competitive two-license system, it is dangerously likely that the greatest amount of money will be bid for a single license and that the successful bidder will win a monopoly on offering ATG service.
    * This is because bidders seeking monopoly positions will benefit more, and therefore will be willing to pay more, than bidders seeking competitive ATG spectrum positions. A monopoly market structure is ideal for maximizing "producer surplus" (*i.e.*, economic rent, or payments to the producer(s) above opportunity costs). The "producer surplus" that bidders expect to achieve using spectrum (a key production input) will be the main factor determining their willingness to pay in an auction.
    * In addition, Verizon/AirFone would probably bid more for a continued monopoly than any two bidders will for two licenses, in part because it can use the monopoly to gain profitable customers for Verizon's terrestrial mobile service. A monopoly market structure for ATG thus has the collateral effect of skewing the terrestrial CMRS marketplace.

- While the "competition" experienced during the auction process may maximize revenue to the government, after the auction is concluded there will be no competition in the marketplace, and consumers will be harmed as a consequence.

- History shows that auctions of monopoly rights simply can not be called competition.

  * Indeed modern economics itself, including Adam Smith's "The Wealth of Nations," grew out of opposition to what were in effect auctioned monopolies that were prevalent in the 17th century system of mercantile economics.

- Competition in the ATG service will provide strong incentives for licensees to develop innovative technological solutions to problems. Experience in the telecom industry validates this point (*e.g.*, wireline telephone companies developed DSL over copper loops only after they faced cable modem competition). By contrast, monopolists lack incentives to innovate. For example, Verizon/Airfone with its monopoly on ATG service to date, allowed the service to atrophy until others came forward with ideas to develop it. By contrast, AirCell has developed new, less costly technology to serve the competitive general aviation sector.

- The problems with the current ATG service are largely due to the comfortable monopoly enjoyed by Verizon/Airfone, to the detriment of consumer welfare.

  - Verizon/Airfone has not kept up with new technology and moved to expand service to airline passengers and the airlines – and its monopoly control over the service gives it very little incentive to do so. Prior to this proceeding, it has never proposed waivers or rule changes to facilitate deployment of broadband.

  - The $3.99 per minute that Verizon/Airfone charges for ATG calls are a huge disincentive to usage for passengers who are used to paying perhaps 5 to 10 cents per minute on their own cell phones and a few dollars a month for Internet access. And the discriminatory preferences that the company offers to Verizon Wireless customers have a pernicious impact on terrestrial competition.

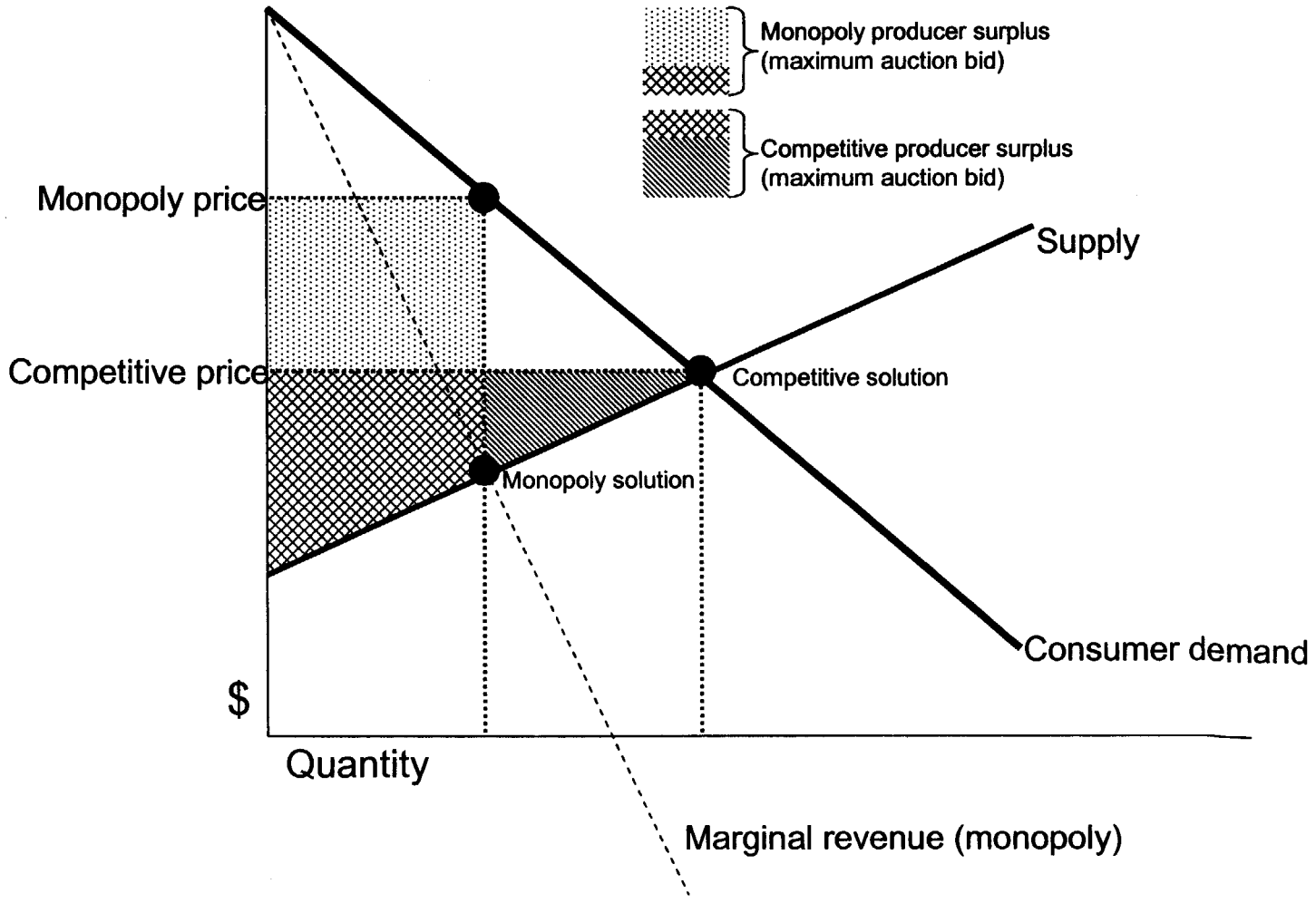
  - Airlines also want to be able to provide better communications service to customers and to derive revenue from these services. Current airline revenues from this service are miniscule and Airfone, despite its current monopoly, has done nothing to develop this market.

    * Broadband-capable satellite services are too costly (and utilize equipment that is too heavy) to provide a realistic competitive alternative for ATG consumers on domestic flights.

  - In the absence of competition, the Commission would face pressure to impose rate regulation on the monopolist or develop other mechanisms to protect consumers, none of which would work as well as a truly competitive market structure.

- Verizon/Airfone's monopoly should not be given a new lease on life in this proceeding when the Commission has a real opportunity to back the same kind of competition that it has encouraged successfully in other areas.

Competitive Market Structure Maximizes Consumers' and Society's Welfare



AirCell, Inc.
WT Docket 03-103

AIR-TO-GROUND
MYTHS & REALITIES

COMPETITION & SPECTRUM POLICY ISSUES

Myth: *To ensure maximum use and flexibility of the ATG spectrum, it is necessary to permit the licensee(s) to provide terrestrial-based services, in addition to air-to-ground services.*

Reality:

- **Allowing terrestrial operations on ATG spectrum would skew the auction results.** Located adjacent to cellular spectrum, a nationwide ATG license with terrestrial authority would have enormous value to an incumbent wireless provider, who would have a motivation to bid much more than other entities who intend to make maximum spectrum capacity available to the flying public. As noted by T-Mobile and Sprint, ancillary service could also skew the terrestrial CMRS market. Although Airfone has publicly stated that ancillary terrestrial authority for ATG "wouldn't be appropriate," nothing guarantees that it would ignore the additional revenue potential in calculating its maximum bid, if the Commission were nevertheless to make terrestrial authority available.

- **Allowing terrestrial operations would increase the risk of interference to neighboring public safety licensees.** With antennas tilted down to provide service on the ground, interference from ATG out-of-band emissions would be a serious concern. A number of commenters – including Sprint, Cingular, Nextel, Verizon Wireless, CTIA and the American Mobile Telecommunications Association – have opposed such use due to interference concerns, and there is nothing in the record that would alleviate this concern. Space Data alone has proposed terrestrial use of ATG spectrum on a "secondary" basis, yet its proposal – involving no terrestrial base stations – would appear to be suited only to Space Data's stratospheric platform technology. There is inadequate information in the record to assess the interference potential of Space Data's proposal, so the grant of any such authority would be premature at this time.

- **Ancillary terrestrial authority is not needed, from either a technical or economic perspective, to make ATG service viable and competitive.** Under the AirCell/Boeing proposal, service to aircraft on the ground (and below altitudes of 200-500 feet) would be provided over non-ATG terrestrial spectrum. ATG is *not* analogous to the mobile satellite service, where the Commission authorized the use of an ancillary terrestrial component ("ATC") to solve the problem of providing reliable satellite service to "urban canyons" and inside buildings. This technical enhancement was needed to improve the competitiveness of MSS offerings vis-à-vis traditional CMRS and other providers, and was conditioned on a number of significant prerequisites. *See* 47 C.F.R. § 25.149. At a minimum, the FCC would need to develop a record in this proceeding regarding appropriate prerequisites before allowing ancillary service in the ATG band.

• **As WTB Chief John Muleta recently commented, additional flexibility is appropriate only where it would lead to greater competition.** No such justification exists here.

Myth: *Competition in the ATG band won't benefit passengers, because even under the two-license approach there will only be one system available on any given plane.*

Reality: • **Airlines *and passengers* will benefit from the interplay between two competitors.** ATG competition will enable airlines to negotiate lower rates and more innovative services for their passengers (as well as for their own use). With competitive pricing, the service cost could be low enough that airlines may decide to provide some services as an amenity (*e.g.*, in-flight WiFi) to passengers at no cost. Thus, there is no justification for abandoning the statutory competition objective simply because the initial purchasing decision will be made by companies rather than individuals. (Under this theory, there would be no need for competition in the market for any telecom services provided to enterprise customers.)

• **With a monopoly provider, it is more likely that some passengers could be left without service if the single ATG provider decided – or was pressured by major airlines – not to serve some market segments (*e.g.*, low-fare airlines, certain routes, or regional competitors).**

Myth: *The airlines are mainly interested in the rapid deployment of broadband ATG; having more than one provider is not a major issue for them.*

Reality: • AirTran, American, Frontier, JetBlue, Northwest, United and the Air Carrier Association of America are all on record in this proceeding as calling for competition in the ATG band.

• **Unlike current ATG system architecture, the new approach will mean far cheaper equipment, thus allowing for shorter term contracts and making it economically feasible to change providers after the relatively short period of time needed to recoup the equipment investment.** This potential advantage over the old ATG structure will be lost if there is only one provider (who would still be able to use its monopoly status to force airlines into long-term contracts).

• **Airlines understand that passenger ATG demands vary based on the particular route – *e.g.*, cities served, flight length and other variables.** With two providers, an airline could, for example, outfit short haul planes with one service and longer haul planes with the other, in order to obtain the most appropriate pricing structure and/or types of services offered for a given route.

Myth: *Two ATG providers are not needed because satellite service will provide adequate competition.*

Reality: **Satellite service cannot compete effectively on domestic routes because equipment is too heavy and expensive, and per-minute costs**

are too high. Even the newest satellite offerings will be priced at $2-7/min., with equipment costs ranging from $500,000 to well over $1 million. By comparison, ATG broadband could be provided for $0.50/min. for a voice call, with equipment costing under $100,000 per plane. No satellite service provider currently serves any domestic routes, nor are there plans to do so. Even satellite service provider Boeing agrees with this assessment.

Myth: *The small, discrete ATG band presents a great opportunity for the Commission to experiment with novel approaches to structuring auctions and developing maximum flexibility service rules.*

Reality:

- **ATG is not a new or generic wireless spectrum band, but is the only band specifically designated for the underserved commercial air-to-ground market.** Experimenting with new competitive bidding and spectrum policy approaches is better suited for one of the many general purpose bands where there is no preconceived notion of what service will be offered and no existing market demand. By contrast, if the experiment fails here, millions of underserved and unserved potential customers (*i.e.*, the flying public) would be adversely affected, and some passengers and airlines may never get access to broadband ATG service.

- **The structure of the ATG band can have broader consequences for wireless services on the ground.** Airfone already offers dramatic savings (83% or more) to Verizon Wireless customers for its current narrowband offering; the availability of discounted broadband ATG will make Verizon's service even more attractive relative to other terrestrial carriers, which won't have the option of partnering with an ATG provider if Airfone remains the monopoly ATG provider. This raises the stakes for getting the policy right in this band, and counsels against a sharp departure from precedent. The FCC generally imposes eligibility restrictions and/or license caps to ensure competitive entry opportunities, particularly for CMRS services and most recently for DBS (*see* FCC 04-271).

Myth: *Because it provides the absolute maximum degree of rule and service flexibility possible, the single-provider approach is the only approach consistent with the Commission's current spectrum policy goals.*

Reality: **Flexibility is just one of several spectrum policy goals.** The Commission recently determined that "promoting efficient spectrum use through sharing spectrum is consistent with our overall spectrum policy," and that requiring "spectrum users to share is consistent with the [Spectrum Policy Task Force Report]." (FCC 04-134, ¶ 45 and note 131). Providing exclusive use licenses is not listed among any of the Communication Act's auction objectives of: (1) promoting the deployment of new technologies and services for the benefit of the public; (2) promoting competition by disseminating licenses among a variety of applicants; (3) recovering for the public a portion of the value of the spectrum; and (4) promoting the efficient and intensive use of spectrum. 47 U.S.C. § 309(j)(3).

Myth: *Maximum service and rule flexibility is needed in the ATG band in case some superior, future technology becomes available that cannot operate with cross polarization. Besides, the lack of competition resulting from a single-provider approach will not be permanent, as new spectrum suitable for ATG may become available in the future.*

Reality: **Starting off with a single broadband ATG provider gives that carrier a "first to market" advantage that is particularly significant in the ATG context, given that it will have time to form important relationships and place many airlines under long-term contracts.** A newcomer arriving years later will be at a distinct disadvantage. The best approach would be to start with two providers. Should one licensee later wish to deploy some as-yet-unconceived technology that is not compatible with overlapping licenses, then that licensee would have the option of acquiring spectrum in the new ATG-suitable band(s).

Myth: *The significance of Airfone's deep-pocketed parent is overrated; ATG can't be that important to Verizon's overall strategy.*

Reality: **While current narrowband ATG usage may be small, all parties agree that there is tremendous airline and passenger demand for broadband ATG.** The market potential is enormous, with more than 600 million enplanements per year and an annual market revenue that AirCell estimates at over $500 million. Moreover, ancillary terrestrial service on a nationwide basis would have enormous value to any incumbent wireless provider and Verizon is already offering lower ATG prices for its wireless customers: $0.69/ min. (or $0.10/ min with a $10 monthly fee) for Verizon customers, compared to $4/min. plus a $4/call connection fee for non-Verizon customers.

TECHNICAL ISSUES

Myth: *The rules needed to enable the AirCell/Boeing proposal would be too complicated and burdensome (even requiring the networks to operate in tandem), thereby increasing the cost of providing the service.*

Reality:

- **No tandem operation or common emission control system will be required.**
- **Like many other services, some minimal coordination will be required, relating principally to the placement of ground stations.** However, for ATG, fewer than 300 total ground stations should be required to provide service across the continental U.S., including airport sites, so the coordination burden will be far less than in any other services. Moreover, if Airfone wins one license, its existing sites should be suitable in most cases, greatly simplifying its coordination obligations.

- **There will be no difference in equipment costs between the single-provider and two-provider approach.** No special base station or aircraft antennas are needed.

- **AirCell agrees that the rules should be flexible.** If default rules are established, the licensees should be able to alter those rules upon mutual consent.

Myth: *True, reliable broadband service cannot be achieved under a two-provider, overlapping license approach.*

Reality: **AirCell, working together with Boeing to develop a joint technical proposal, has demonstrated in multiple technical filings, *to the satisfaction of OET technical staff*, that the use of cross polarization – a tried and true technique – will permit two licensees to provide full broadband service without harmful interference.** Moreover, AirCell has conducted actual flight tests that support its findings. AirCell is willing to invest millions of dollars to enter the commercial air-ground market based on its confidence in the two licensee plan.

Myth: *The license configuration of the ATG band has no implication on the ability of the licensee(s) to comply with any necessary out-of-band emission limit.*

Reality: **The AirCell/Boeing approach can – and will – satisfy the out-of-band emission ("OOBE") limitations urged by Nextel, APCO and other parties.** AirCell agrees that there is an important need for such a limit to ensure protection to neighboring public safety and other spectrum users. As Nextel has noted, a two-license approach would actually *diminish* harmful OOBE, and the "AirCell/Boeing approach is unlikely to cause harmful interference to adjacent-band operations." Conversely, Airfone and Space Data have not indicated in the record that they would be able to satisfy the necessary OOBE limit. As Nextel stated, these proposals "are *extremely likely* to cause harmful interference to adjacent-band licensees."

Myth: *Deck-to-deck coverage cannot be achieved under a two-provider, overlapping license approach.*

Reality: **Under the AirCell/Boeing proposal, the transceiver unit installed in the aircraft will be dual mode, so that while the plane is on or near the ground (*i.e.*, at the gate, taxi, take off and landing), the unit will communicate on terrestrial frequencies.** This airport-vicinity ground coverage may be provided by existing cellular/PCS carriers, or by use of other terrestrial spectrum. Once above 200-500 feet, the unit will switch seamlessly to the ATG band (much like current terrestrial hand-offs between networks, as occurs in roaming situations). AirCell has demonstrated that this system will experience no difficulties at different airports – even more challenging airports near mountains, such as Denver and Salt Lake City.

The Record Supports Competition in the ATG Band

*Commenters supporting **competition** within the ATG band:*

Air Carrier Association of America: *"Approximately 80 percent of the current U.S. aircraft fleet operates without passenger air-to-ground service. There are a number of problems with Broadband capable satellite systems, including their cost and weight. Unfortunately, we have not seen viable alternatives. In our increasingly competitive industry, it is essential that airlines be able to take advantage of the benefits and consumer choice that come with real competition in the provision of passenger broadband services."*

Frontier Airlines: *"[T]here is no doubt that airlines and consumers would best be served by allowing competition between multiple vendors."*

NorthWest Airlines: *"Competition will control consumer prices [and] foster the development of new capabilities . . . ."*

United Airlines: *"[T]he Commission should promote competition in broadband air-ground services . . . . [T]he Commission can ensure that a competitive marketplace will govern the price of air-ground service . . . ."*

JetBlue Airways: *"Future enhancements to our customer amenities will only be possible if the marketplace is open to vibrant competition. To this end, JetBlue . . . urges the FCC to take all necessary actions to allow multiple broadband providers. Fair competition, as JetBlue has demonstrated in the airline industry, benefits all consumers."*

AirTran Airways: *"Competition will . . . encourage rapid implementation of new service offerings by AirTran Airways and others."*

American Airlines: *"The number of service providers allowed to operate in the spectrum should be limited only as necessary to ensure that all of the service provider(s) can simultaneously provide broadband connectivity. American Airlines favors a competitive arena . . . ."*

Sprint: *". . . Sprint views the opportunity to extend voice and data services onboard commercial airlines as an important frontier for commercial telecommunications services. To ensure that providers have reasonable access to their customer base on commercial aircraft, Sprint urges the Commission to pursue a regulatory approach for revamping the ATG service that facilitates competition among multiple service providers. . . . [C]ost and logistical constraints may prevent satellite systems from serving as a viable competitive alternative . . . ."*

T-Mobile USA: *"T-Mobile would like to be able to extend its [HotSpot] service from airports to in-flight commercial aircraft. It recognizes, however, that its ability to offer its*

customers this service could be severely limited or even foreclosed unless the Commission licenses multiple competitors in the air-to-ground band. . . . If the Commission were to authorize an exclusive provider in the only band currently allocated for terrestrial air-to-ground service, the result could be a higher-priced, lower quality and less innovative service for consumers."

Nextel: *"[C]ompetition from multiple operators in the same band will result in lower prices, more choices and higher quality for consumers, thereby advancing the public interest."*

Senator Conrad Burns: *"The public interest requires that competition in communications services be maximized and that we take all steps to avoid the development of a monopoly that could saddle consumers with the type of high prices and limited innovations we have seen with the existing phone service on our airlines. Accordingly, I urge you to ensure we have competition in air-to-ground services."*

Société Internationale de Télécommunications Aéronautiques (SITA): *"[T]he public interest would be well served if the manifold benefits of competition could be transferred to the air-to-ground market as a matter of course."*

Connexion by Boeing: *"Competition will enhance choice without degrading the seat experience. . . . Taking reasonable steps to avoid monopolization is the only course that conforms to the statutory directive to conduct auctions in a manner that 'promot[es] economic opportunity and competition.'"*

Robert Crandall (past president, chairman & CEO of American Airlines and current member, FAA Management Advisory Council): *"Competition will provide airlines a choice among providers and services, will accelerate the development and deployment of new capabilities, and will lower the cost of services for consumers."*

*Commenters supporting an **exclusive license** approach:*

Verizon Airfone: *"In order to build on its existing network and upgrade it in a way that will accommodate broadband, the Commission's rules must be modified to facilitate Verizon Airfone's 'exclusive use' of a sufficient amount of spectrum to support broadband services. As Verizon Airfone indicated in its comments, it will require access to all or most of the 800 MHz air-ground band . . . ."*

SUMMARY OF COMMENTERS' POSITIONS IN THE ATG DOCKET

SUPPORTS COMPETITION IN THE ATG BAND	*SUPPORTS SINGLE BROADBAND ATG LICENSE*
1. Air Carrier Association of America	1. Verizon Airfone
2. AirCell	
3. AirTran Airways	
4. American Airlines	
5. Senator Conrad Burns	
6. Connexion by Boeing	
7. Robert Crandall	
8. Frontier Airlines	
9. JetBlue Airways	
10. Nextel	
11. NorthWest Airlines	
12. Société Internationale de Télécommunications Aéronautiques (SITA)	
13. Sprint	
14. T-Mobile USA	
15. United Airlines	

Commenters Oppose Terrestrial Use of the ATG Band

*Commenters **opposing** terrestrial use of the ATG band:*

American Mobile Telecommunications Association: *"[T]here should be no changes in the technical parameters of this [ATG] service, including adding a terrestrial component, unless and until it can be determined conclusively that the modification would have no interference potential for 800 MHz users."*

CTIA – The Wireless Association™: *"After several years of analysis and debate regarding interference to [the 800 MHz] band of spectrum, prudent policymaking dictates that the Commission act with caution, particularly with regard to the creation of a new terrestrial service in this band. . . . [T]he possibility for adjacent band interference exists, particularly with regard to operations close to the ground. Adding the additional uncertainty of an ancillary terrestrial service will magnify those concerns, particularly due to the lack of a record on the subject of terrestrial operations in the band."*

Cingular Wireless: *"[T]here are serious interference concerns arising from concurrent terrestrial and airborne use of the same spectrum . . . . In the absence of extensive test data showing that terrestrial use of air-ground frequencies will not diminish the reliability of air-ground service, the Commission clearly should not authorize the provision of terrestrial service on air-ground frequencies and thereby jeopardize its availability for public safety needs."*

Sprint: *"Sprint opposes [ancillary terrestrial service] as unsupported by the record in this proceeding. The mixture of ATC and ATG service implicates interference and other issues not adequately addressed by the docket and submissions made."*

T-Mobile: *"[T]his is the only band currently allocated to terrestrial air-to-ground service. As such, the Commission should ensure that the licensee(s)' predominant use of this spectrum is for the provision of air-to-ground service. Because this band is located immediately adjacent to CMRS spectrum, there is a significant risk that the licensee would decide to abandon the ATG market and instead the deploy the spectrum to offer terrestrial CMRS services only."*

Verizon Wireless: *"Verizon Wireless agrees that allowing terrestrial operations to occur in the air-ground spectrum would present significant interference issues. . . . Because there are relatively few air-ground base stations needed for air-ground service, B band cellular providers can avoid interference issues by careful cell placement and special filters. However, should terrestrial service be allowed on the air-ground spectrum, licensees of that spectrum will need to put in more base stations thereby increasing the potential for interference with cellular B band carrier operations."*

*Commenters **supporting** terrestrial use of the ATG band:*

Space Data: *"Handsets also could be programmed to use these [ATG] frequencies as a last resort if the handset failed to receive other cellular frequencies. This approach would limit the terrestrial use of the air-ground frequencies to areas in the United States that currently have little or no wireless coverage. The amount of terrestrial traffic using the air-ground frequencies would be low and unlikely to interfere with air-ground wireless traffic. . . . Stratospheric technologies, like that employed by Space Data, are perfectly suited to deliver these services . . . ."*

SUMMARY OF COMMENTERS' POSITIONS

OPPOSE TERRESTRIAL USE	*SUPPORT TERRESTRIAL USE*
1. AirCell 2. American Mobile Telecommunications Association, Inc. 3. Connexion by Boeing 4. Cingular Wireless 5. CTIA 6. Nextel 7. Sprint 8. Verizon Wireless	1. Space Data

December 8, 2004

The Honorable Michael Powell
Chairman
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

RE: Air-Ground Services; WT Docket No. 03-103

Dear Chairman Powell:

I am writing to address what appears to have emerged as an important issue in the above-referenced docket. In our discussions with the Commission concerning the opportunity for the Commission to adopt rules permitting competition in the air-to-ground ("ATG") band, there seemingly remains a question as to whether shared use of the ATG band by two competitors would entail costs or technical constraints so great as to outweigh the expected benefits of competition. The simple and clear answer is "no," as we believe has been amply demonstrated in the record and in our various technical discussions with the Staff.

AirCell has devoted very substantial engineering resources and effort to the development of a network design and plan for a full broadband, air-to-ground system for commercial airlines. AirCell has worked closely with Boeing engineers on the two-licensee technical proposal and has also vetted it with a number of large wireless carriers.

As part of that effort we carefully evaluated the costs associated with the sharing plan in order to ensure that it could be constructed in a cost-effective manner from commercially available, off-the-shelf equipment. Attached is a letter from one of AirCell's engineering consultants that more specifically addresses this issue. In summary, it is our finding and conclusion that the incremental costs required to implement sharing of the ATG spectrum represent a negligible increase over the cost to a single network provider.

These small incremental costs are not a disincentive for my company to provide competitive ATG service. Indeed, I would be surprised if any potential entrant in the ATG market would view costs of this magnitude to be a deterrent to providing ATG service.

We are absolutely convinced that the AirCell/Boeing two licensee proposal will enable full broadband deployment with no degradation of bandwidth, capacity, speed, or range of services in comparison to the single, monopoly network proposed by Verizon Airfone.

Furthermore, AirCell is committed to making a very significant further investment to secure an ATG license at auction and to build out a nationwide network in order to have the competitive opportunity to provide service to passengers onboard thousands of aircraft. Rest assured we would not be doing this unless we had complete confidence that the service we provide will be exactly what the airlines and their passengers expect. Anything else would be folly.

We also believe strongly that any expressed concern about possible constraints on hypothetical future technologies is misplaced – particularly as a basis for thwarting a decision to foster true competition *now*. AirCell is confident that future improvements to broadband technologies that can operate in the relatively narrow, 4 MHz band can be accommodated in a dual license environment. Obviously, future higher bandwidth technologies, if and as they emerge, would be candidates for and would need to find a home in possible future allocations of additional air-to-ground frequencies.

It is clear that the overwhelming majority of parties commenting in this proceeding want the Commission to structure the ATG industry in a competitive fashion. The technical record supports the finding that the FCC can have full broadband communications *and* competition for the benefit of the airlines and their passengers.

Therefore, AirCell continues to urge the FCC to reject any auction or licensing proposal that includes a single 4 MHz or 3 MHz broadband ATG license. Instead, the FCC should only consider auction or licensing options that will ensure competition, such as the AirCell-Boeing two-licensee proposal.

Finally, on a related issue, the FCC should not allow ancillary terrestrial use of the ATG band given the serious concerns raised by many parties in this proceeding. At a minimum, the FCC should not make any final decisions on ancillary terrestrial use of this band at this stage of the proceeding. Instead, it should develop a further record on the many interference, competition, and auction-related concerns raised by the parties.

Please do not hesitate to contact me directly if you have any questions about this subject matter or would like additional information from our engineering staff concerning the costs of implementing competition in the ATG band.

Sincerely,

/s/ Jack Blumenstein

Jack Blumenstein
Chairman and CEO

Enclosure

Saroka & Associates, LLC

43468 Whetstone Court
Ashburn, VA 20147
703 723 8740 tel
703 723 0458 fax
703 362 3236 mob
gsaroka@mindspring.com

December 8, 2004

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street NW, Room TW-A325
Washington, DC 20554

Re: Docket 03-103
Commission's Rules to Benefit the Consumers of Air-Ground Telecommunications Services

Dear Ms Dortch:

Saroka and Associates submits these comments on the Commission's examination of the rules governing the provision of air-ground services on commercial aircraft.

Saroka and Associates is a telecommunications consulting firm, and has been engaged by AirCell, Inc. to support various activities associated with the development of their technology, engineering and business plans for development of competitive commercial air-to-ground communications capabilities. The undersigned has 30 plus years in various aspects of the telecommunications business, spanning product design and manufacturing and network systems design, implementation and operations. Responsibilities have included responsibilities for all network engineering and operations activities for GTE Mobilnet, and responsibility for all engineering activities for GTE Airfone. This background provides a solid basis for analysis of some issues that have been raised in this proceeding.

In particular, there may be concerns that the benefits of competition may be outweighed by the costs associated with adopting a competitive structure, and by potential constraints on future technical options for technology employed in such a competitive structure.

The Commission is encouraged to consider the realities of both the costs and the potential constraints, lest it be concluded that the very real benefits of competition are outweighed by entirely speculative costs and constraints. With respect to the implementation of systems by two carriers, each carrier's cost will be essentially the same as that of a single carrier monopolizing the air-to-ground band. One carrier will use horizontally polarized antennas rather than vertically polarized antennas, but the costs of this difference are not material in relation to the overall costs of deploying a nationwide network. In addition, there will be an initial cost of engineering personnel engaged in coordinating network design parameters between the two systems to assure that interference is not created between systems. This will amount to a modest number of man-weeks of effort, a cost that will again be insignificant in the context of overall design and implementation costs of a nationwide network.

Broadband technologies suitable for the air-to-ground environment and the available spectrum are limited, and cdma2000 1xRTT EVDO has been identified by all participants as the best available technology for use in the air-ground spectrum. This technology is backwards compatible with all of the various CDMA permutations back to IS-95, and can reasonably be expected to be forward compatible with future air

interface permutations. Under a monopoly scenario, we would expect the carrier to be inclined to leverage such ongoing improvements as the primary source of technology innovation in the air-ground band, since development of a more effective, air-ground-specific technology is likely to be cost-prohibitive and impractical. (It may also be worth noting that, in a single-carrier scenario, there is likely to be limited incentives to identify, develop and implement technology innovations in the absence of any significant competitive pressures.)

The spectrum sharing approach before the Commission is in fact a technology innovation that effectively doubles the broadband capacity of the air-ground spectrum as well as providing the basis for licensing two competitive carriers. The trade-offs related to technology innovation therefore can be summarized as:

- single carrier license – limited incentives to innovate, but relative freedom to do so
- two carrier licenses – an initial doubling of spectrum capacity, a competitive environment that will drive implementation of innovations, and freedom to adopt innovations that continue to emerge in cdma2000 technology.

In summary, the advantage of the certain technology innovations under the two-carrier scenario is likely to outweigh the entirely speculative technology innovations that might be implemented by a monopoly carrier. The cost of a network implemented under a two-carrier scenario will not be significantly different from those that would be incurred by a monopoly carrier. A Commission decision to implement a two-carrier licensing approach may clearly be justified when consideration is given to the balance of competitive benefits versus the costs of implementation and potential restrictions on technology innovation.

Respectfully,

Grant Saroka
Principal Consultant
Saroka & Associates, LLC